BLACK BOX®
NETWORK SERVICES

JUNE 2007
VOE231
VOE232
VOE233
VOE234
VOE235
VOE236

# Multiport Analog VoIP Router

## Important

This is a Class A device and is intended for use in a light industrial environment. It is not intended nor approved for use in an industrial or residential environment.

## Approval

Models that are equipped with FXO interfaces have been approved for connection to the public telecommunication network.


**CUSTOMER SUPPORT INFORMATION** Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

WARNING

- **The VOE230 contains no user serviceable parts. The equipment shall be returned to Black Box for repairs, or repaired by qualified service personnel.**
- **Mains Voltage: Do not open the case the power cord is attached. The external power adaptor shall be a listed limited power source that incorporates a disconnect device and shall be positioned within easy reach of the operator. The mains outlet shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker.**
- **For AC powered units, ensure that the power cable used meets all applicable standards for the country in which it is to be installed, and that it is connected to a wall outlet which has earth ground.**
- **Hazardous network voltages are present in WAN ports regardless of whether power to the VOE230 is ON or OFF. To avoid electric shock, use caution when near WAN ports. when detaching the cables, detach the end away from the VOE230 first.**
- **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.

## TRADEMARKS USED IN THIS MANUAL

All applied-for and registered trademarks are the property of their respective owners.

# 1. Power up the VOE230

CAUTION

The terminal block header to which the wires are secured provides the disconnect for the VOE230. Take proper measures to ensure that it is not permanently fastened to the receptacle mounted on the chassis.

1. Connect the VOE230 to a power source using the included power supply and cable.

2. When the *Power* LED stops blinking and remains lit, the VOE230 is ready to configure.

# 2. Connect the VOE230 to your PC

**Note** For factory default IP address information, see Appendix B. on page 12.

## Option 1: Connect to a network that has a DHCP server

Using the included black Ethernet cable, connect the VOE230 RJ-45 Ethernet WAN port, labeled *ETH0/0* (see Figure 1), to an Ethernet hub or switch on the same network as your PC. WAN interface *ETH0/0* is configured as DHCP client.

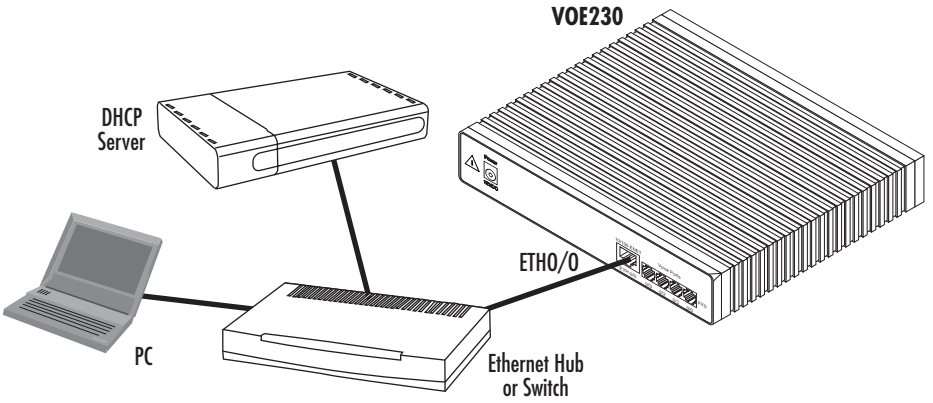



**Figure 1.** Connecting the VOE230 to your PC through a hub or switch

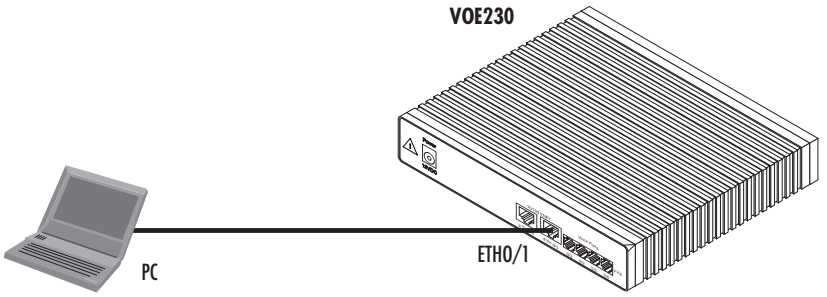



**Figure 2.** Connecting the VOE230 directly to your PC

## Option 2: Connect directly to a PC

LAN interface *ETH0/1* is configured as DHCP server (see Figure 2).

1. Configure your PC as a DHCP client.

**Note** The procedures below are for Microsoft Windows. For another operating system, refer to the operating instruction that came with your PC.

2. Right-click on *My Network Places* and select *Properties* in the context menu (see Figure 3).

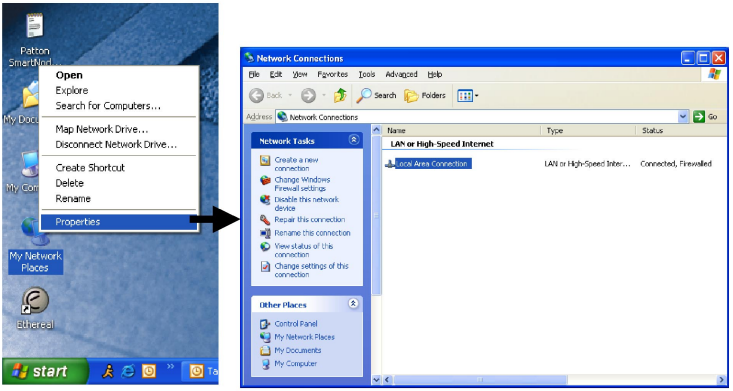



**Figure 3.** Displaying the Network Connections window

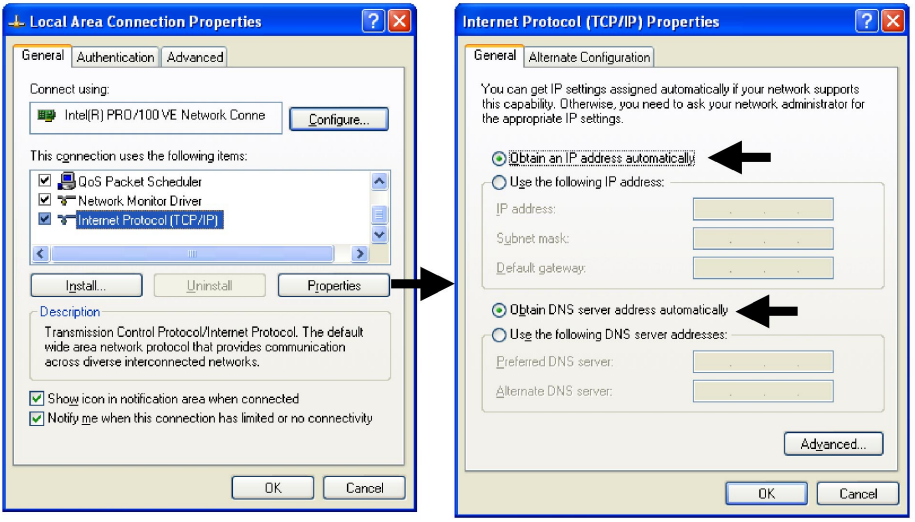



**Figure 4.** Displaying the Internet Properties (TCP/IP) Properties window

3. Double-click on *Local Area Connection* and click on **Properties** to open the *Internet Protocol (TCP/IP) Properties* window (see Figure 4).

4. Select *Obtain an IP address automatically* and *Obtain DNS server address automatically* options.

5. Click **OK** to save changes and close the properties windows.

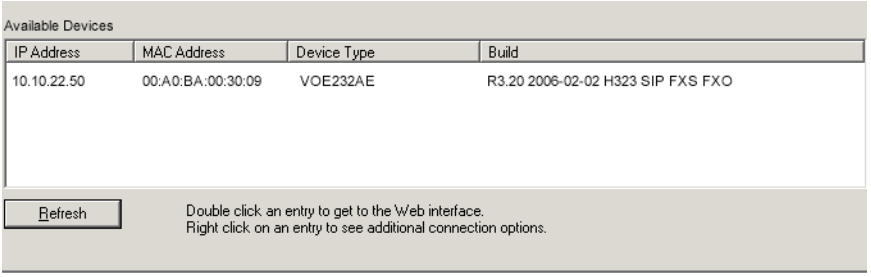
6. Using the included black Ethernet cable, connect the VOE230 RJ-45 Ethernet LAN port labeled *ETH0/1* directly to the Ethernet port on your PC (see figure 2 on page 4).

### Option 3: Connect the VOE230 console port to your PC

If your PC has an RS-232 serial COM port, you may use it to connect the VOE230 Console port. Refer to the *VOE230 Getting Started Guide* located on the CD-ROM shipped with your VOE230 for the procedure.

# 3. Start the VOE Discovery Tool

1. Insert the CD included with your VOE230 into the CD drive on your PC.
2. Copy the file named *VOEDiscovery.exe* from the CD to your PC.



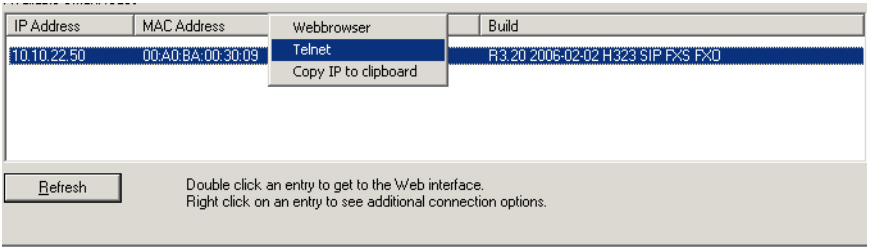

3. At your PC, double-click the *VOEDiscovery.exe* file name to activate the tool. The VOE Discovery Tool window will display the IP Address, MAC Address, Device Type (model number) and Build (software release) of your VOE230.

If your VOE230 does not appear:

- Make sure the VOE230 and your PC are on the same routed subnet
- Make sure any firewall programs on your PC are disabled

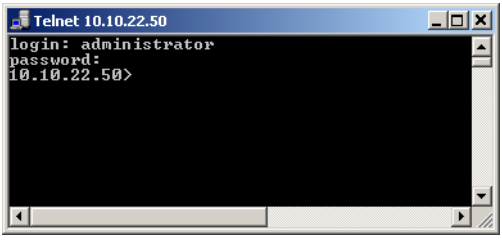
# 4. Access the Command Line Interface

1. In the Discovery Tool window, select the IP address of your VOE230.




2. Right-click the selected line, and select *Telnet*.

3. In the telnet window, enter the username *administrator*. At the password prompt simply press the **enter** key. The VOE230 will respond by displaying its IP address as the command line prompt.




4. After you log in your VOE230 will be running in operator execution mode (indicated by > character in the command line prompt). To enter configuration mode, use the commands enable and configure.

```
10.10.22.50>enable
10.10.22.50#configure
10.10.22.50(cfg)#
```

You may now start to configure the VOE230 from scratch using the CLI commands, but we recommend that you start your configuration from a template. See section “Loading the configuration” on page 9 for further details.

# 5. Loading the configuration

Black Box provides a collection of configuration templates on the CD-ROM shipped with your VOE230 device, one of which may be similar enough to your application that you can use it to speed up configuring the VOE230. Simply download the configuration note that matches your application to your PC. Adapt the configuration as described in the configuration note to your network (remember to modify the IP address) and copy the modified configuration to a TFTP server. The VOE230 can now load its configuration from this server.

**Note** If your application is unique and not covered by any of Black Box's configuration templates, you can manually configure the VOE230 instead of loading a configuration file template.

In this example we assume an TFTP server resides on the host with the IP address 10.10.1.11 and the configuration file named *VOE.cfg* resides in the root directory of the TFTP server.

```
10.10.22.50(if-ip)[eth0]#copy tftp://10.10.1.11/VOE.cfg star-
  tup-config
Download...100%
10.10.22.50(if-ip)[eth0]#
```

After you reboot the VOE230 the new startup configuration will become active.

When you issue the reload command, the VOE230 will ask if you want to copy the running configuration to the startup configuration. Since you just downloaded a configuration file to the startup configuration you must answer this question with ***NO***. Otherwise, the downloaded configuration will be overwritten and lost!

```
10.10.22.50(if-ip)[eth0]#reload
Running configuration has been changed.
Do you want to copy the 'running-config' to the 'startup-con-
  fig'?
Press 'yes' to store, 'no' to drop changes : no
Press 'yes' to restart, 'no' to cancel : yes
The system is going down
```

# 6. Additional Information

Refer to the *VOE230 Getting Started Guide* located on the CD-ROM shipped with your VOE230 device and available online at **www.blackbox.com/manuals.** For detailed information about:

- Installing, configuring, operating, and troubleshooting.
- Warranty, trademark & compliance

The CD-ROM also includes many freeware and shareware tools, including TFTP servers, and Telnet clients.

# A. Factory default IP address information

| Item | IP Addresss(es) | Network Mask |
|---|---|---|
| WAN interface Ethernet 0 (ETH 0/0) | DHCP client | DHCP client |
| *LAN interface Ethernet 1 (ETH 0/1) | 192.168.1.1 | 255.255.255.0 |
| *DHCP server address range | 192.168.1.10–192.168.1.19 | 255.255.255.0 |

*. The VOE230 factory-default configuration includes a DHCP server running on the ETH 0/1. All Ethernet ports are pre-configured and active.

# B. Compliance Information

## B.1 Compliance

EMC:

- FCC Part 15, Class A
- EN55022, Class A
- EN55024

Safety:

- UL60950-1/CSA C22.2 No. 60950-1
- IEC 60950-1
- EN60950-1
- AS/NZS 60950-1

PSTN Regulatory Compliance:

- FCC Part 68
- CS-03
- TBR-21
- AS/ACIF S002
- AS/ACIF S003

### B.2 Radio and TV Interference

The VOE230 router generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. The VOE230 router have been tested and found to comply with the limits for a Class B computing device in accordance with specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the VOE230 router does cause interference to radio or television reception, which can be determined by disconnecting the unit, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

### B.3 FCC Part 68 (ACTA) statement (FXO ports)

This equipment complies with Part 68 of the FCC rules and the requirements adopted by ACTA. On the bottom side of this equipment is a label that contains—among other information—a product identifier in the format ***US:AAEQ##TXXXX***. If requested, this number must be provided to the telephone company.

The method used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact our company. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information

### B.4 Industry Canada Notice (FXO ports)

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation *IC* before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

This Declaration of Conformity means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations. Repairs to some certified equipment should be made by an authorized maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the ground connections of the power utility, telephone lines and internal metallic water pipe system, are connected together. This protection may be particularly important in rural areas.

### B.5 CE Declaration of Conformity

Product Description: VOE230 Series

The products described above in the form as delivered are in conformity with the provisions of the following European Directive:

R&TTE Directive 1999/5/EC

Guidelines of the European Parliament and the Committee for the Harmonization of the Legal Regulations of the Member States concerning radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

CE The safety advice in the documentation accompanying the products shall be obeyed. The conformity to the above directive is indicated by the CE sign on the device.

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### B.6 Approval

Models that are equipped with FXO ports have been approved for connection to the public telecommunication network.

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